

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-15. (Canceled)

16. (New) A device, comprising:

a piezoelectric material layer and a ferroelectric material layer clamped together, the ferroelectric material layer having a predetermined direction of polarization; and means for providing an input signal to one layer for causing an induced output signal from the other layer without causing a change in the predetermined direction of polarization, the induced output signal from the other layer having a phase determined by the predetermined direction of polarization.

17. (New) An amplifier, comprising:

a piezoelectric material layer and a ferroelectric material layer clamped together, the ferroelectric material layer having a predetermined direction of polarization; and means for providing an input signal to one layer for causing an induced output signal from the other layer without causing a change in the predetermined direction of polarization, the induced output signal from the other layer having a phase determined by the predetermined direction of polarization.

18. (New) A transformer, comprising:

a piezoelectric material layer and a ferroelectric material layer clamped together, the ferroelectric material layer having a predetermined direction of polarization; and means for providing an input signal to one layer for causing an induced output signal from the other layer without causing a change in the predetermined direction of polarization, the induced output signal from the other layer having a phase determined by the predetermined direction of polarization.

19. (New) An inverter, comprising:
a piezoelectric material layer and a ferroelectric material layer clamped together, the ferroelectric material layer having a predetermined direction of polarization; and
means for providing an input signal to one layer for causing an induced output signal from the other layer without causing a change in the predetermined direction of polarization, the induced output signal from the other layer having a phase determined by the predetermined direction of polarization.

20. (New) The device as claimed in claim 16, wherein a common electrode is provided between the two layers, an input electrode is provided on one of the layers and an output electrode is provided on the other of the layers, the input and output electrodes being disposed on opposite sides of their respective layers compared with the common electrode.

21. (New) The device as claimed in claim 20, wherein the input electrode is arranged on the ferroelectric material layer.

22. (New) The amplifier as claimed in claim 17, wherein a common electrode is provided between the two layers, an input electrode is provided on one of the layers and an output electrode is provided on the other of the layers, the input and output electrodes being disposed on opposite sides of their respective layers compared with the common electrode.

23. (New) The amplifier as claimed in claim 22, wherein the input electrode is arranged on the ferroelectric material layer.

24. (New) The transformer as claimed in claim 18, wherein a common electrode is provided between the two layers, an input electrode is provided on one of the layers and an output electrode is provided on the other of the layers, the input and output electrodes being disposed on opposite sides of their respective layers compared with the common electrode.

25. (New) The transformer as claimed in claim 24, wherein the input electrode is arranged on the ferroelectric material layer.

26. (New) The inverter as claimed in claim 19, wherein a common electrode is provided between the two layers, an input electrode is provided on one of the layers and an output electrode is provided on the other of the layers, the input and output electrodes being disposed on opposite sides of their respective layers compared with the common electrode.

27. (New) The inverter as claimed in claim 26, wherein the input electrode is arranged on the ferroelectric material layer.

28. (New) A comparator, comprising:
a piezoelectric first material layer and a ferroelectric second material layer clamped together, the ferroelectric second material layer having a predetermined direction of polarization, and a third layer of material clamped together with the first and second material layers, said third layer being a ferroelectric material; and

means for providing a respective input signal to each of the first and second layers for causing an induced output signal from the third layer without causing a change in the predetermined direction of polarization, the induced output signal from the third layer having a phase determined by the predetermined direction of polarization.

29. (New) The comparator as claimed in claim 28, wherein a first input electrode is provided on one of the layers, a second input electrode is provided on another of the layers, a common electrode is provided between the layers having the input electrodes, and an output electrode is provided on the third layer, the input electrodes being disposed on opposite sides of their respective layers compared with the common electrode.

30. (New) The device as claimed in claim 16, further comprising a further layer of ferroelectric material.

31. (New) A method of operating a device having a layer of piezoelectric material and a layer of ferroelectric material clamped together, the ferroelectric material layer having a predetermined direction of polarization, the method comprising:

applying an input signal to one of the layers without causing a change in the predetermined direction of polarization; and

causing an output signal from the other layer having a phase determined by the predetermined direction of polarization.

32. (New) The method as claimed in claim 31, wherein the input signal is applied to the ferroelectric material layer.

33. (New) A method of operating the comparator as claimed in claim 28, the method comprising:

applying a signal to set the polarization in the ferroelectric second layer to a predetermined direction; and

causing an output signal from the ferroelectric third layer having a magnitude proportional to the sum or the difference of the magnitude of the respective input signals.

34. (New) A device, comprising:

a piezoelectric material layer and a ferroelectric material layer clamped together, the ferroelectric material layer having a predetermined direction of polarization; and

a device to provide an input signal to one layer causing an induced output signal from the other layer without causing a change in the predetermined direction of polarization, the induced output signal from the other layer having a phase determined by the predetermined direction of polarization.